Travel & Events *(click on location for more info.)*

Apr 2	New London, Ct	USS Toledo SSN769
Apr 3	New London, Ct	SOBC, NSMRL
Apr 4	New London, Ct	CSG-2
Apr 16-19	Rota Spain	6th Fleet MetOc Conf
Apr 22-25	Berkeley Springs	ONR Code 32 Internals
Apr 26	Washington D.C.	ONR HQ/NRL
Apr 27	Washington D.C.	N096 (Oceanographer)
Apr28- May 2	Victoria, BC	TTCP Mar Group Mtg
May 3-4	Burnaby, BC	Simon Fraser Univ.
May 28-29	Bath, UK	SEA Ltd
May 30	Bath, UK	Univ. of Bath
June 23-25	Hamburg, GE	DOD
June 26-27	Hamburg, GE	UDT Europe 2001

Visiting Scientist Program

Dr. Noel E. Davidson, [Senior Research Scientist, Bureau of Meteorology Research Centre], to NRLMRY and NPS to explore opportunities for collaborative research on tropical cyclones, particularly with respect to the impact of prognostic cloud microphysics on forecast track and intensification. During his visit, Dr. Davidson provided a detail description of BMRC current tropical cyclone research and prediction program, illustrated their experiences with a recently-implemented prognostic cloud microphysics in BMRC limited area prediction system, discussed issues and problems of mutual interest that can be addressed through collaborative research, and initiated a collaborative research projects with NRL possibly utilizing the IFO's NICOP program. Full details can be found at web link: **Dr. Davidson's VSP Report.**

Dr. Edmo J.D. Campos [Professor, Institute of Oceanography, University of Sao Paulo, Brazil] and **Dr. Alberto Piola** [Department of Oceanography, Hydrographic Service Argentina] to NRLSSC for a joint proposal for a cooperative project via NICOP funding. USP and affiliates propose to use NRL's STARRS instrument to perform a rapid survey of surface salinity, temperature, and ocean color of this region during each of the two seasons, in exchange of data. There has never been a synoptic survey of the entire shelf between Buenos Aires and Rio de Janeiro. Yet, there is circumstantial evidence that the Rio de la Plata low salinity plume can extend nearly to Cabo Frio (22 S). Local collaborators from Argentina, Uruguay, and Brazil will conduct in-situ surveys simultaneously. Collaboration in this area will enhance ONR/NRL and the Navy's global and regional models for South America. **Link to Joint VSP Trip Report . Point of contact is** Prof. Dr. Edmo J.D. Campos e-mail: edmo@usp.br.

Dr. Peter T Gough [Professor, Acoustics Research Group, University of Canterbury, New Zealand] to Northrop Grumman, and ONR HQ, in support of a NAVSEA initiative to prototype a Slow Speed SAS system. Dr. Gough's new work involves an attempt to get multispectral SAS images (30kHz and 100kHz) as well as future work in simultaneous bathymetric estimates of the sea floor. His goal is to enhance Northrop Grumman's development of Slow Speed SAS to include baythmetric estimates. Their aim is to be able to determine contour plots or 3D imagery of objects on or partly buried on the seafloor, to contribute to the Organic MCM FNC. The Acoustic Research Group has already demonstrated across-track resolution of 5cm and their hydrophone transducer elements are 15cm square of along track resolution. Point of contact, Dr. Peter Gough, email: Gough@elec.canterbury.ac.nz. Link to Dr. Gough's Report

Conference Support Program

Dr. Jorg M. Hacker [Chief Scientist ARA – Airborne Research, Australia, Flinders University, Australia] and **Dr. Jørgen Jensen** [Senior Research Scientist, CSIRO Atmospheric Research] received funding for atmospheric data collection during a separate experiment within ACE-ASIA, 23-30 April 2001. The preliminary data collected off of Kagoshima, Japan, will be analyzed, and evaluated prior to an upcoming workshop entitled, " Multi-Platform Airborne Study Aerosol-Cloud Interaction during ACE-Asia" to held in February 2002 at Monash University, Clayton, Victoria, Australia. Full details can be found at web link: **Dr. Hacker's CSP Report.** Point of contact is Dr. Jorg Hacker, email: Jorg.Hacker@flinders.edu.au.

Summary of Newsletters

COPPE/Federal University of Rio de Janeiro - Setting the Pace in Ocean Engineering on the Regional and Local Scales

COPPE/Federal University of Rio de Janeiro, Ocean Engineering department has two unique facilities under development (scheduled to be fully equipped in 2002), the world's largest ocean basin laboratory, and the Laboratory for Cohesive Sediment Dynamics. High interest work includes fine grain sediment transport/mobility studies in Amazon estuary and rivers; sea state analysis; "mean sea-level" long-term analysis; and underwater sound propagation models. Programs in COPPE/UFRJ Coastal and Oceanographical Engineering Group offer expertise in regional/local waters, and tropical environments.

For more information see *METOC Newsletter 01-04*.

Breakthrough in Multi-Angle-of-Arrival Estimates takes Interferometric Sonars to the Next Level -- Innovation at Simon Fraser University, Canada

The Underwater Research Laboratory, at Simon Fraser University, Burnaby, Canada, is conducting research on new sonar imaging concept/ breakthrough in multipath-angle-of-arrival estimates that can be applied to the principles of interferometry. This technology is developed into a "prototype sonar" to provide high resolution 3D underwater acoustic mapping and imaging that exceeds the capabilities of interferometry but does not require a large beamformed array. This technology is demonstrated by the presentation of vertical profiles and high-resolution 3D acoustic images. ONR Code 32 and NRL 7000 have an interest in developing technologies and systems that can provide high quality data, high-resolution 3D seafloor images, and environmental characterization.

For more information see *METOC Newsletter 01-05*.

Travel & Events Highlights

Apr 2 New London Connecticut Change of Command USS Toledo SSN 769

Attended and participated in USS Toledo SSN 769 Change of Command.

Web address: USS Toledo SSN 769
Obtained an operational perspective of S&T requirements for the Submarine Force. The tour of the USS Toledo, and Change of Command Ceremony provided a unique opportunity to exchange knowledge/programs/and support structure between the S&T and Operational communities.

[Return to top of document]

Apr 3 New London Connecticut Navy Submarine School, CSG-2 Oceanographer

Discussed Tactical Oceanographic Support to the Operational Submarine Force, as well as operational requirements that could be leveraged via S&T.

Web address: COMSUBGRU TWO and Navy Submarine School
Visit to various commands was to obtain an understanding of "the state of the art" technology in submarine systems that characterize the undersea environment, or tactical displays/decision aid/simulators available for the warfighter. This background knowledge will be used to focus future technology searches, to find advance submarine systems in the international science and technology community, that will improve and enhance future U.S. Submarine capabilities through collaborative development with the allied navies (visa via funding programs of ONRIFO).
POC: LT Terance Henkle [henklet@csg2.navy.mil]

[Return to top of document]

Apr 4 New London Connecticut Naval Submarine Medical Research Laboratory

Conducted an orientation site visit and S&T Liaison discussions with the Information Processing & Display Research Team and the Submarine Escape & Rescue Research Team.

Web address: The Naval Submarine Medical Research Laboratory
In our meeting, I was briefed on the Watchstanding project studying performance and physiology as a function of three different watchstanding schedules in a simulated submarine laboratory.
Potential Collaboration -The Royal Australian Navy is doing a similar project. The PI for the Australians is LT Sarah Chapman, a "submarine psychologist." NSMRL are hopeful that LT Chapman could come to the U.S. to assist with project data collection next month and learn more about NSMRL study as a guide for similar experiments in Australia.
POC: LCDR C. Shake, [Shake@NSMRL.navy.mil]

[Return to top of document]

Apr 16-19 Rota Spain Naval European METOC Center/CNE/6TH Fleet Requirements Conference

Provided an ONRIFO overview on how METOC requirement are obtained by the S&T/R&D communities and transited to the fleet (coordinated with ONR HQ and NRL). Dr. DelBalzo, NRLSSC provided additional briefs, on TAMDA (AXBT replacement) design study and BT sampling requirements to ensure sufficient MODAS accuracy. CDR Bedell, NRLMRY provided an update on NRL projects, Aerosols, TAWS, and Electro-Optical Prediction. All brief were well received, with comments from CNE/6TH Fleet desiring better coordination of S&T/R&D events taking place in the CNE AOR.

Web address: Naval European Meteorology and Oceanography Center
Potential Collaboration - In the development of capability to measure and transmit environmental data in remote areas.
Study/assess potential impact/limitations of icing on AUVs along designated routes.
Development of technologies to remotely sense salinity in highly variable salinity environments that has a direct impact on submerged objects (i.e., large UUVs) buoyancy.
Enhanced models to predict dispersion of toxic industrial material, natural disasters, and NBC contaminants for both ocean and atmospheric dispersion.
Better mesoscale winds/seas model output. Improve 72-hr Mesoscale forecasts in support of operations planning.
The development of a complete Marine Mammal mitigation database for Mediterranean
The development of an Aerial Reconnaissance TDA for multiple sensors on ISR platforms.
IUSS/LFA range prediction capability.
Internal wave prediction/salinity prediction capability in littoral waters.
POC: CDR Chris Butler [cbutler@onriof.navy.mil]

[Return to top of document]

Apr 22-25 Berkeley Springs, WV ONR Code 32 Internals

Attend and participate in ONR-HQ Ocean, Atmosphere, and Space S&T Internals.

Web address: ONR Code 32 – Ocean, Atmosphere, and Space Science and Technology
Participated in Organic Mine Countermeasures Future Naval Capability Working Group. ONR Internals provided an overview of program thrusts, interactions, and objectives for the next 5 years.

[Return to top of document]

Apr 26. Washington D.C. ONR HQ/NRL

Discuss ONRIFO support to ONR HQ Code 32, and NRL DC.

Web address: NRLCode7000

At ONR I obtained the U.S. Trends Statement to be presented at the TTCP Maritime Panel Meeting. At NRL DC I met with Dr. Ed Franchi (Acoustic Division Chief) to provide feedback on recent visit to Brazil and the Brazilian Navy's desire for a DEA in ASW. Dr. Franchi's concern was on the status of the DEA, and who the DEA action officers were. I pointed him to Dr. McCulsky at the ONRILO HQ.

[Return to top of document]

Apr 27 Washington D.C Oceanographer of the U.S. Navy - N096

At N096, provided a brief on leveraging funds/research efforts in support of requirements via ONRIFO international collaboration program.

Web address: Oceanographer of the U.S. Navy – N096
Demonstrated search function of Code 32 Annual Report CD-ROM to assist the warfighting capability requirements officers on tracking down the status of the S&T portion of requirements. Also demonstrated the NRL database created by CDR Long (Dr. Harwig's Military Deputy) which displays number of 6.1-6.4 work units dedicated to listed requirements.
POC: Philip S Vinson [Vinson.Philip@HQ.NAVY.MIL]

[Return to top of document]

Apr 28-02 May **Victoria B.C. Canada** **Defense Research Establishment Pacific**

Site of TTCP Maritime Group meeting (TP 1,2,9,10,13). Participate in the 48th Annual TTCP Maritime Systems Group Meeting

Web address: The Technical Cooperation Panel

TTCP Maritime Group discussed Maritime Systems S&T research trends of 5 TTCP nations. Participated as the Military Customer representative for the U.S. and as an observer from the IFO in a technology watch capacity. Presented the U.S. Trends Statement on behalf of Capt Smolinski, CO ONRIFO. It has been documented in the minutes that all of TTCP involve the IFO in there meetings (spearheaded by Denny Ryan, Capt USN retired).

[Return to top of document]

May 3-5 **Burnaby, B.C.** **Simon Fraser University, Underwater Research Laboratory**

Discussions on S&T collaboration discussions in MCM Sonar and UUV research

Web address: www.ensc.sfu.ca/research/url/
SFU, Underwater Research Laboratory conducts "state-of-the-art" research in a) 3D bottom imaging using interferometric sonar; b) acoustic array design, c) sensor to actuator information flow in autonomous under-water vehicles; d) acoustic position systems for small area survey; and, e) detection and decision theory. These support technologies can contribute to the Organic MCM Future Naval Capabilities. **For more information see *METOC Newsletter 01-05*.**
POC: Professor John S. Bird [jbird@sfu.ca]

[Return to top of document]

May 28-29 **Bath, U.K.** **Systems Engineering & Assessment Ltd**

Discussed potential collaboration opportunities in interferometric sonar systems in relation to mine countermeasures

Web address: www.sea.co.uk
Potential Collaboration - Submetrixs just joined the SEA Ltd May of 1999, and will be discussing the way ahead in the next several months. There is an interest to invest in technologies that will give the Series 2000 Sonar capabilities for Mapping Benthic Communities.
POC: Tom Hiller [Tom.Hiller@sea.co.uk]

[Return to top of document]

May 30 **Bath, U.K.** **University of Bath, Department of Physics**

Discuss Automatic Mine Detection Algorithms using texture analysis of the seafloor, and future research goals in Bistatic Acoustics, and acoustic backscatter studies, conducted by Dr. Phillppe Blondel.

Web address: www.bath.ac.uk
The Department of Physics' acoustic lab is fully equipped for seafloor, acoustic interaction studies with a variety of sediment types in a tank for acoustic experiments. Good mainstream work ongoing with respect to texture analysis, details of sediment maps from entropy and homogeneity comparisons. Dr. Blondel is in charge of Bath's participation in an EU project to detect buried or half-buried objects. His technique has utility in mine burial experiments, but more data on mine types, shapes, materials, etc in needed to validate studies, and pave the way ahead
Potential Collaboration - Summer 2002, the current research project on bistatic scattering will be finished, and some of the results or techniques developed might be of interest to other members of the ONR Mine Burial Experiment Exercise Team. The potential of an ONRIFO-funded workshop on "Sonar Imagery Processing and Object Detection" was discussed. To cut costs, for international participants, the proposed workshop will be organized to occur just before or after one of the international underwater acoustics meetings taking place in 2002. The details of the workshop are still under development. One of the concepts being staffed is to provide the participants with a series of test images that they could process with their different software before the meeting. During this workshop scientist could present their results in a constructive and synthetic fashion, and discuss the technological differences behind their results.
POC: Blondel, Phillppe, [pyspb@bath.ac.uk]

[Return to top of document]

un 23-25 Hamburg, Germany German Oceanographic Data Center (DOD)

Viewed DOD's Marine Environmental Database, and discussed potential utility in Environmental Impact Studies ISO Marine Mammals.

Web address: http://www.bsh.de/Oceanography/DOD/DOD.htm
The German Oceanographic Data Centre (NODC) serves as a focal point for the national and international exchange of oceanographic data. The objectives of DOD are

- to acquire the marine data sampled by German institutes and agencies, archive it and maximize its utilization by promoting data exchange on a national and international level,
- to meet Germany's international data exchange obligations according to the resolution of the Intergovernmental Oceanographic Commission (IOC), and under the Oslo/Paris and Helsinki Conventions regarding monitoring of the North Sea/North-East Atlantic and Baltic Sea, respectively.

The Marine Environmental DataBase (MUDAB) is a joint project of the Federal Maritime and Hydrographic Agency (BSH) in Hamburg and of the Federal Environmental Agency (UBA) in Berlin.
MUDAD serves as the central German database for marine data collected within the framework of international and national conventions for the protection of the North Sea and Baltic Sea.
At present the database covers about 5 500 cruises, with the data from some 250,000 stations - altogether more than 13 million records. The data covers physical variables such as temperature and salinity, O2, chemical variables like, e.g., nutrients and the organic, inorganic and radiochemical components of seawater, and physical and chemical variables in sediment. The data base scheme encompasses a large amount of meta-information at different levels, e.g. a Cruise Summary Report (CSR) for each cruise, information about measured variables and the methods used, quality assurance, and intercomparison exercises. Each of the measured data can be linked to meta-information, including information at other structural levels. At present, databases for sediment, water and contaminants in organisms are in operation. The database for seawater covers casts, time series as well as CTD/XBT profiles.
Potential Collaboration - Conference Support Program proposal for a Marine Mammals and Environmental Assessment Database Developmental Workshop (date tentatively late FY2002). One of the goals of the workshop will be to combine different international Marine Environmental database with databases on Marine Mammal Migration Patterns, as well as comparing visualization software for environmental characterization. DOD's database stores information on physical and chemical determinants (nutrients + contaminants incl. radioactivity) in seawater (including also some estuaries), sediments, particulate matters and biota as well as atmospheric data. Areas of investigation range from coastal waters to open seas - also e.g. Antarctica or Arctic. DOD also manages biological data like benthos and plankton species composition, abundance and biomasses, chlorophyll contents etc. - Mainly for the areas of monitoring activities. DOD has a lot of biological data for the Baltic Sea in file collections, which are not yet loaded to the database (except for chlorophyll data), but are available. Other departments of BSH provide data on currents and sea level, ice coverage, topography etc. and have mighty tools for modeling. DOD also maintains close connections to all European NODCs (National Oceanographic Data Centers), ICES and the World Data Centers. BSH provides six vessels to execute different tasks in different areas - from the coastal sea areas to the North Atlantic (even Barents and Kara Sea). People on board are asked to report sightings of whales by using the German forms, which were developed for this purpose.
POC: Ms. Sunhild Wilhelms [sunhild.wilhelms@m5.hamburg.bsh.d400.de]

[Return to top of document]

Jun 26-27 Hamburg, Germany Undersea Defense Technology Conference 2001

Participate in the Undersea Defense Technology Conference and Exhibition (General session 26-27 Jun 2001).

Web address: http://www.udtnet.com/europe/
UDT Europe is the only dedicated exhibition and conference that unites undersea defense buyers, specifiers and end-users with manufacturers, suppliers, contractors, distributors, consultants and research organizations. Conference provided an avenue to meet new prospects for international collaboration in the MCM/USW corporate thrust area.

[Return to top of document]